Application No. 10/688,076

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (previously presented) An ion implanter electrode component for use in an ion implanter having an electrode which includes an electrically conductive electrode support frame, and adapted to generate an ion beam, comprising:

an electrically conductive insert member adapted to be inserted into said ion implanter support frame installed in said ion implanter, said insert member comprising an electrode body portion defining an aperture, said insert member further comprising a plurality of alignment pins positioned to engage said ion implanter support frame and to align said aperture in an aligned position relative to said ion implanter support frame wherein said electrode body portion is positioned to receive said ion beam passing through said aperture, said insert member further comprising a plurality of retention flanges adapted to engage said ion implanter support frame and to retain said electrode body portion in said aligned position within said ion implanter support frame and electrically coupled to said support frame during said ion beam generation.

2. (original) The component of claim 1 wherein each alignment pin has a cylindrical pin body portion which defines a cylindrical outer surface adapted to engage said ion implanter support frame.

3. (original) The component of claim 1 wherein each alignment pin has a pin body portion which defines an outer surface adapted to engage said ion implanter support frame, and a retention cap having a width wider than the width of said pin body portion wherein each alignment pin retention cap defines a retention flange.

4. (original) The component of claim 1 wherein the alignment pins, retention flanges and the electrode body portion are integrally formed wherein the insert member is a one-piece member.

5. (original) The component of claim 1 wherein said support frame has a flat face portion and said insert member has a flat face portion and wherein said insert member flat face portion is positioned engaged face to face with said support frame flat face portion in said aligned and retained position.

6. (original) An ion implanter electrode for use in an ion implanter adapted to generate an ion beam, comprising:

an electrically conductive electrode support frame which defines an aperture having first and second alignment surfaces wherein said first alignment surface is groove-shaped; and

an electrically conductive insert member adapted to be inserted into said ion implanter support frame, said insert member comprising an electrode body portion defining an aperture and adapted to be inserted into said support frame aperture, said insert member further comprising a first alignment pin positioned to engage said ion implanter support frame groove-shaped first alignment surface and a second alignment pin position to engage said ion implanter support frame second alignment surface to align said aperture in an aligned position relative to said ion implanter support frame wherein said electrode body portion is positioned to receive said ion beam passing through said aperture, said insert member further comprising a plurality of retention flanges adapted to engage said ion implanter support frame and to retain said electrode body portion in said aligned position within said ion implanter support frame and electrically coupled to said support frame.

7. (original) The electrode of claim 6 wherein each alignment pin has a cylindrical body portion which defines a cylindrical outer surface adapted to engage said ion implanter support frame.

8. (original) The electrode of claim 6 wherein each alignment pin has a body portion which defines an outer surface adapted to engage said ion implanter support frame, and a retention cap having a width wider than the width of said pin body portion wherein each alignment pin retention cap defines a retention flange.

9. (original) The electrode of claim 6 wherein the alignment pins, retention flanges and the electrode body portion are integrally formed so that the insert member is a one-piece member.

10. (original) The electrode of claim 6 wherein said support frame has a flat face portion and said insert member has a flat face portion and wherein said insert member flat face portion is positioned engaged face to face with said support frame flat face portion in said aligned and retained position.

11. (previously presented) The electrode of claim 6 further comprising a spring positioned between said insert member and said support frame to bias said insert member in said aligned and retained position.

12. (original) A method of assembling an ion implanter electrode for use in an ion implanter adapted to generate an ion beam, comprising:

inserting an electrically conductive insert member into an electrically conductive electrode support frame which defines an aperture having first and second alignment surfaces wherein said first alignment surface is groove-shaped, wherein said insert member comprises an electrode body portion defining an aperture;

engaging a first alignment pin of said insert member with said ion implanter support frame groove-shaped first alignment surface;

engaging a second alignment pin of said insert member with said ion implanter support frame second alignment surface to align said insert member aperture in an aligned position relative to said ion implanter support frame wherein said electrode body portion is positioned to receive said ion beam passing through said aperture; and

engaging a plurality of retention flanges of said insert member with said ion implanter support frame to retain said electrode body portion in said aligned position relative to said ion implanter support frame and electrically coupled to said support frame.

13. (original) The method of claim 12 wherein each alignment pin has a cylindrical body portion which defines a cylindrical outer surface adapted to engage an alignment surface of said ion

implanter support frame.

14. (original) The method of claim 12 wherein each alignment pin has a body portion which defines an outer surface adapted to engage an alignment surface of said ion implanter support frame, and a retention cap having a width wider than the width of said pin body portion wherein each alignment pin retention cap defines a retention flange.

15. (original) The method of claim 12 wherein the alignment pins, retention flanges and the electrode body portion are integrally formed so that the insert member is a one-piece member.

16. (original) The method of claim 12 wherein said inserting includes engaging an insert member flat face portion face to face with a support frame flat face portion.

17. (original) The method of claim 12 further comprising positioning a spring between said insert member and said support frame to bias said insert member in said aligned and retained position.

18. (previously presented) An ion extraction electrode component for use in an ion implanter having an electrode which includes an electrically conductive electrode support frame, and adapted to generate an ion beam, comprising:

a one-piece electrically conductive insert member adapted to be inserted into said ion implanter support frame installed in said ion implanter, said insert member comprising an integral electrode body portion defining an aperture, said insert member further comprising a plurality of integral alignment pins wherein each alignment pin has a cylindrical pin body portion which defines a cylindrical outer surface adapted to engage said ion implanter support frame and to align said aperture in an aligned position relative to said ion implanter support frame wherein said electrode body portion is positioned to receive said ion beam passing through said aperture, wherein each alignment pin further has a retention cap having a width wider than the width of said pin body portion wherein each alignment pin retention cap defines a retention flange adapted to engage said ion implanter support frame and to retain said electrode body

portion in said aligned position within said ion implanter support frame and electrically coupled to said support frame during said ion beam generation, and wherein said support frame has a flat face portion and said insert member has a flat face portion and wherein said insert member flat face portion is positioned engaged face to face with said support frame flat face portion in said aligned and retained position.

19. (previously presented) An ion implanter electrode component for use in an ion implanter having an electrode which includes an electrically conductive electrode support frame having alignment pins and retention flanges, and adapted to generate an ion beam, comprising:

an electrically conductive insert member adapted to be inserted into said ion implanter support frame installed in said ion implanter, said insert member comprising an electrode body portion defining an aperture, said insert member defining a plurality of alignment slots, each alignment slot having a base surface which defines an alignment surface adapted to be engaged by a support frame alignment pin to align said insert member aperture in an aligned position relative to said ion implanter support frame wherein said electrode body portion is positioned to receive said ion beam passing through said insert member aperture, said insert member further comprising a plurality of retention surfaces, each retention surface being adapted to be engaged by said ion implanter support frame retention flanges to retain said electrode body portion in said aligned position within said ion implanter support frame and electrically coupled to said support frame during said ion beam generation.

20. (original) The component of claim 19 wherein each alignment pin has a cylindrical pin body portion which defines a cylindrical outer surface adapted to engage said ion implanter insert member alignment slot base surface.

21. (original) The component of claim 19 wherein each alignment pin has a pin body portion which defines an outer surface adapted to engage said ion implanter insert member alignment slot base surface, and a retention cap having a width wider than the width of said pin body portion wherein each alignment pin retention cap defines a retention flange.

22. (original) The component of claim 19 wherein the component is made of graphite.

23. (original) The component of claim 19 wherein said support frame has a flat face portion and said insert member has a flat face portion and wherein said insert member flat face portion is positioned engaged face to face with said support frame flat face portion in said aligned and retained position.

24. (original) An ion implanter electrode for use in an ion implanter adapted to generate an ion beam, comprising:

an electrically conductive electrode support frame which defines an aperture; and

an electrically conductive insert member adapted to be inserted into said ion implanter support frame, said insert member comprising an electrode body portion defining an aperture and adapted to be inserted into said support frame aperture, said insert member further comprising first and second alignment surfaces of which said first alignment surface is groove-shaped;

wherein said support frame further comprises a first alignment pin positioned to engage said ion implanter insert member groove-shaped first alignment surface and a second alignment pin position to engage said ion implanter insert member second alignment surface to align said insert member aperture in an aligned position relative to said ion implanter support frame wherein said electrode body portion is positioned to receive said ion beam passing through said aperture, said insert member further comprising a plurality of retention flanges adapted to engage said ion implanter support frame and to retain said electrode body portion in said aligned position within said ion implanter support frame and electrically coupled to said support frame.

25. (original) The electrode of claim 24 wherein each alignment pin has a cylindrical body portion which defines a cylindrical outer surface adapted to engage said ion implanter insert member.

26. (original) The electrode of claim 24 wherein each alignment pin has a body portion which defines an outer surface adapted to engage said ion implanter insert member, and a retention cap having a width wider than the width of said pin body portion wherein each alignment pin retention cap defines a retention flange.

27. (original) The electrode of claim 24 wherein the alignment pins, retention flanges and the electrode body portion are integrally formed so that the support frame is a one-piece member.

28. (original) The electrode of claim 24 wherein said support frame has a flat face portion and said insert member has a flat face portion and wherein said insert member flat face portion is positioned engaged face to face with said support frame flat face portion in said aligned and retained position.

29. (original) The electrode of claim 24 further comprising a spring positioned between said insert member and said support frame to bias said insert member in said aligned and retained position.

30. (original) A method of assembling an ion implanter electrode for use in an ion implanter adapted to generate an ion beam, comprising:

inserting an electrically conductive insert member into an electrically conductive electrode support frame having an aperture wherein said insert member comprises an electrode body portion defining an aperture;

engaging with a first groove-shaped alignment surface of said insert member with a first alignment pin of said support frame;

engaging a second alignment surface of said insert member with a second alignment pin of said support frame to align said insert member aperture in an aligned position relative to said ion implanter support frame wherein said electrode body portion is positioned to receive said ion beam passing through said insert member aperture; and

engaging a plurality of retention flanges of said support frame with said ion implanter insert member to retain said electrode body portion in said aligned position relative to said ion implanter support frame and electrically coupled to said support frame.

31. (original) The method of claim 30 wherein each alignment pin has a cylindrical body portion which defines a cylindrical outer surface adapted to engage an alignment surface of said ion implanter insert member.

32. (original) The method of claim 30 wherein each alignment pin has a body portion which defines an outer surface adapted to engage an alignment surface of said ion implanter insert member, and a retention cap having a width wider than the width of said pin body portion wherein each alignment pin retention cap defines a retention flange.

33. (original) The method of claim 30 wherein the alignment pins, retention flanges and the electrode body portion are integrally formed so that the support frame is a one-piece member.

34. (original) The method of claim 30 wherein said inserting includes engaging an insert member flat face portion face to face with a support frame flat face portion.

35. (original) The method of claim 30 further comprising positioning a spring between said insert member and said support frame to bias said insert member in said aligned and retained position.

36. (original) An ion extraction electrode component for use in an ion implanter having an electrode which includes an electrically conductive electrode support frame having round alignment pins, and adapted to generate an ion beam, comprising:

a one-piece electrically conductive insert member adapted to be inserted into said ion implanter support frame installed in said ion implanter, said insert member comprising an integral electrode body portion defining an aperture, said insert member further defining a plurality of rectangular alignment slots, each alignment slot having a base surface which defines an alignment surface adapted to be engaged by a support frame alignment pin to align said insert member aperture in an aligned position relative to said ion implanter support frame during said ion beam generation, wherein one base alignment surface is groove-shaped.